

Monster Fire, Native Fish



For use with: Arizona Wildlife Views Television Show, 07-08 Season, Episode 9

Human-Environment Interactions; Natural Disasters

Time Frame: 3-4 hours

Grade: 4-8

Overview:

This video contains stories from around Arizona. First, the site of the Rodeo-Chediski fire is visited five years later to look at the impacts to wildlife. The cienegas of southern Arizona and the unique native fish found there are the focus of the second segment. The last story focuses on dove hunting near Yuma. Students will write a persuasive essay about the medical uses of Arizona's native fish and other wildlife.

Essential Questions

- How can human activities benefit and harm wildlife?
- How do natural disasters affect wildlife and habitat?
- What is the value of wildlife?

Objectives

- Explain the impact of forest canopy to biodiversity.
- Explain the importance of color adaptations to fish survival and reproduction.
- Analyze the value of wildlife from scientific, financial, and aesthetic perspectives.
- Use multiple resources to research medicinal uses of animals.
- Write a persuasive essay focused on the medicinal uses of animals.

Arizona Department of Education Standards

Science

4 th grade	5 th grade	6 th grade	7 th grade	8 th grade
S3-C1-PO1	S3-C1-PO1	S2-C1-PO3	S2-C1-PO3	S2-C1-PO3
S3-C1-PO2		S3-C1-PO1	S4-C3-PO5	S3-C1-PO2
S4-C3-PO1				

Social Studies

4 th grade	5 th grade	6 th grade	7 th grade	8 th grade
S4-C5-PO2	S4-C5-PO2			S5-C1-PO5

Writing

4 th grade	5 th grade	6 th grade	7 th grade	8 th grade
S3-C4-PO1	S3-C4-PO1	S3-C4-PO1	S3-C4-PO1	S3-C4-PO1

Technology

4 th – 8 th grades
5T-E1-PO1

Workplace Skills

4 th – 8 th grades
3WP-E1-PO1
7WP-E1-PO1
7WP-E2-PO1



Materials and Resources

- Copy of Arizona Wildlife Views episode



Teacher Preparation

- Acquire a copy of the television show. You can check local listings to determine when it will air and record it directly. You may also check the Department's web site to see if a copy can be downloaded or ordered.
- Write the vocabulary words and questions on the board.

Background Information:

This is not a lesson plan in the traditional sense. It does not provide step-by-step directions for completing an activity. Instead, it provides information to help you use an episode of the *Arizona Wildlife Views* television program in your classroom. It contains four suggested activities along with extensions and modifications. The first activity focuses on vocabulary. We have provided and defined some of the words used in the video. You are encouraged to use any appropriate strategies to introduce these to your students. Then, there is a series of comprehension questions that students can answer while watching the video. Answers (directly from the video) are provided in italics. Next, the critical thinking questions build on the major concepts introduced in the video. Students need to put a little bit more thought into these questions. Some reasonable answers are provided in italics. However, teachers should be cautious and realize that students may provide additional answers that can be supported with evidence. Finally, there is an in-depth activity. This activity allows students to evaluate and synthesize one or more of the concepts from the video, perhaps applying it to a new context or utilizing additional skills.

This episode originally aired on PBS (KAET, Channel 8) in Phoenix on April 6, 2008. It may also be shown on regional PBS stations or other channels. For additional viewing information or download options, please visit <http://www.azgfd.gov/focuswild>.

Additional information about the animals featured in this episode can be found at:

- ✓ How Did the Rodeo-Chediski Fire Impact the Mule Deer Population:
http://www.azgfd.gov/w_c/research_rodeochediski_mule_deer.shtml
- ✓ Effects of Forest Structure on Fire Severity on the Rodeo-Chediski Fire:
http://www.azgfd.gov/w_c/research_rodeochediski_fire_effects.shtml
- ✓ Did the Rodeo-Chediski Fire Affect Fish Communities in the Salt River:
http://www.azgfd.gov/w_c/research_saltriver_fire.shtml
- ✓ Gila Chub: http://www.azgfd.gov/w_c/nongame_gila_chub.shtml
- ✓ Mourning Dove:
http://www.azgfd.gov/h_f/game_mourning_dove.shtml
- ✓ White-winged Dove:
http://www.azgfd.gov/h_f/game_whitewing_dove.shtml

Relevant Vocabulary:

- Bag Limit – the maximum number of a particular animal that can be fished or hunted at one time
- Biodiversity – number of different species in an area
- Canopy – top layer of leaves and branches in a forest
- Cienega – a Spanish term representing a swampy, wetland
- Monoculture – an area populated by a single plant species
- Mosaic – a patchwork of plants in an area, often resulting from uneven burning during fires
- Salinity – the amount of salt in soil or water
- Tributary – a smaller river or stream that flows into a larger one
- Viviparous – giving birth to live young rather than eggs

Comprehension Questions:

1. How fast and intense was the Rodeo fire burning? *Answer: 1 square mile per minute.*
2. How many people were evacuated during the Rodeo-Chediski fire? How many people were killed? *Answer: 50,000 people were evacuated but there were no fatalities.*
3. Which animal seems to have benefited the most from the fire? *Answer: Mule deer.*
4. How did the fire improve habitat for turkeys? *Answer: With the forest canopy reduced, grass and shrub cover provides protection for young turkeys. In addition, more food is available.*
5. When did the Rodeo-Chediski fire occur? *Answer: 2002.*
6. What is the only live-bearing native fish in Arizona? *Answer: Gila topminnow.*
7. Who purchased the Canelo Hills Preserve? When? *Answer: The Nature Conservancy purchased the preserve in 1968.*
8. What non-native fish is a large threat to Gila topminnow survival? *Answer: Mosquitofish.*

Critical Thinking Questions:

1. How does a thick canopy affect the biodiversity of a forest ecosystem? *Answer: In general, a thick canopy reduces biodiversity. The canopy prevents sunlight from reaching the ground. As a result, shrubs, grasses, and other smaller trees are not able to survive. The forest ends up with a few species of large trees. This also reduces the animals that would use the forest, particularly those that require low cover or food.*
2. During the breeding seasons, the male Gila topminnow changes color, to a black with yellow fins, and the male desert pupfish changes to a blue with yellow fins. What benefit does this color change bring to the fish? *Answer: Some biologists believe that the color change increases the breeding males' ability to attract a mate. In addition, the females may correlate the bright colors to improved reproductive abilities.*
3. Does all wildlife have value and, if so, is that value the same? *Answer: Wildlife has a*

major financial impact on the state. The sale of hunting and fishing licenses, both reliant on wildlife, provide millions of dollars to the state. In addition, watchable wildlife tourism boosts the economy. In 2001, watchable wildlife activities contributed about \$1.5 billion to Arizona's economy. Beyond the financial value, however, many people believe that wildlife has an aesthetic value. Wildlife contributes to the overall health of an ecosystem. In general, all wildlife is valuable. However, sometimes animals need to be removed in order to improve the life of the ecosystem as a whole. This is particularly important for non-native, invasive species. These species out-compete the native plants and animals and often destroy the habitat. These species are important in their own native habitat but not necessarily in the area they have invaded. Finally, it is often necessary to hunt animals in order to control the populations. Elk are a perfect example. If there are too many elk, they can overgraze the area. This limits the food available, causing the elk population (as well as others) to crash.

In-Depth Activity: Wildlife Medicine

Because Arizona has so many unique habitats and some extreme weather conditions, scientists have learned that many of the state's native animals have adaptations that may benefit humans. For example, the Gila topminnow is being studied by skin cancer researchers because of its ability to spend most of its life in direct sunlight with minimal impacts. The desert pupfish can survive extreme conditions. As a result, scientists are using the fish to study kidney function and potential treatments for kidney disease.

Use the Internet (and other resources) to identify additional Arizona animals that may have medical benefits to humans. Are any animals currently being used in medical products or procedures? What happens to the animals that are used for these purposes? What animals are scientists currently studying? What

are the advantages and disadvantages of using these animals? Do you support this research?

Write a persuasive essay. Your goal should be to inform your reader about this research and the animals, and convince them of your opinion. Be sure to support your claims with evidence.

Differentiated Instruction:

Extensions:

- **Art:** Divide a piece of paper into three equal sections. In the first section, draw a picture of a forest. In the second section, draw the same forest immediately following a large fire. In the last section, draw a picture of that forest a few years after the fire. Be sure to include some of the animals you might find in the forest.
- **Mathematics:** There are 640 acres in one square mile. The Rodeo-Chediski fire burned 719 square miles. How many acres is that? There were 175,000 acres of National Forest burned. What percent of the total area was on National Forest land?

Modifications:

- Create a student handout with the vocabulary words and questions already provided.
- Provide students with the definitions and have them match them to the appropriate vocabulary words.
- Provide fill-in-the-blank responses for the Comprehension Questions, allowing students to listen for appropriate words to complete the sentences.

Reflection:

Use the space below to reflect on the success of the lesson. What worked? What didn't? These notes can be used to help the next time you teach the lesson. In addition, the Department would appreciate any feedback. Please visit <http://www.azgfd.gov/focuswild> and submit a lesson evaluation.

